

INSULATED RAILROAD BOX CAR

SPECIFICATION

FIELD OF THE INVENTION

The present invention relates to a railroad box car.

5 More particularly this invention concerns a railroad box car that is insulated and intended for the shipment of temperature-sensitive goods.

BACKGROUND OF THE INVENTION

A standard railroad box car has a frame provided with trucks that ride on the rails, and a superstructure with a floor,
10 a roof, end walls, and side walls. The side walls can be partially or wholly formed by sliding doors.

When temperature-sensitive goods are being shipped in such a box car, it is standard to provide it with conditioning
15 means in the form of a heater or air conditioner. The walls are insulated by forming them as a pair of skins with blocks of insulation between the skins. While such an insulation system is effective when new, with time the insulation blocks shift and create voids where the r-value drops considerably. Hence parts
20 of the walls insulate very poorly and thus allow the contents, typically food, to spoil, or even create a situation where the

cooler/heater can no longer keep up and the entire space inside the box car reaches a temperature outside the acceptable range.

OBJECTS OF THE INVENTION

It is therefore an object of the present invention to
5 provide an improved railroad box car.

Another object is the provision of such an improved railroad box car which overcomes the above-given disadvantages, that is which is particularly well insulated in such a manner that the r-value of the insulation does not change over time.

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SUMMARY OF THE INVENTION

A railroad box car has a truck-carrying railroad chassis and walls on the chassis forming a closable longitudinally extending space that is heated or cooled . According to the invention the walls are each formed of an inner
15 skin, an outer skin, and a mass of cellular plastic foam between the skins bonded at least to an outer face of the respective inner skin. Plastic struts holding the inner and outer skins apart. The walls include a horizontal floor, a pair of upright and transverse end walls, a pair of upright and longitudinal side
20 walls each formed by two slidable doors, and a horizontal roof. Each outer wall is spaced from the respective inner wall.

According to the invention the doors are slidable longitudinally of the space. They have lower edges provided with rollers and the box car further comprises longitudinally extending tracks on which the rollers ride. These tracks are carried on the chassis below the floor and the doors extend downward past the floor. Furthermore, the doors have upper edges and the roof has tracks in which the upper edges slide. The door upper edges have inwardly angled extensions sliding on the tracks. Latch means is provided for arresting the doors relative to the roof and floor. This latch means seals with the roof.

The roof in accordance with the invention is formed by a longitudinally extending roof beam that is cambered. In fact it is shaped so as to urge the doors into closed positions. The roof beam further is formed with air-flow passages connected to the conditioner. Seals on the end walls, roof, and floor engage edges of the doors in closed positions thereof.

BRIEF DESCRIPTION OF THE DRAWING

The above and other objects, features, and advantages will become more readily apparent from the following description, reference being made to the accompanying drawing in which:

5 FIG. 1 is a side view of a box car according to the invention;

 FIG. 2 is a cross section taken along line II-II of FIG. 1;

 FIGS. 3A and 3B are top and edge views of a roof plate
10 for the box car;

 FIG. 4 is a section along line IV-IV of FIG. 3A;

 FIG. 5 is an edge view of a roof beam in its loaded, straight condition;

 FIG. 6 is a view like FIG. 5 but with the beam in its
15 unloaded, cambered condition;

 FIG. 7 is a cross-section through a lower corner of the box car; and

 FIG. 8 is a cross section through an upper corner of the box car.

SPECIFIC DESCRIPTION

As seen in FIGS. 1 and 2 a box car according to the invention has a standard truck-supported chassis 1 having a superstructure 2 forming a cargo-holding space 3 surrounded on all sides by insulated walls 4. A cooler/heater 5 outside the space 3 maintains it at the desired temperature. These walls 4 comprise a horizontal floor 6, two vertical end walls 7 and 8, two vertical side walls 9 and 10, and a roof 13.

The walls 4 are each formed by a metallic inner plate or skin 14, a metallic outer plate or skin 15 spaced from the respective inner skin and defining therewith a space 16, and a mass 17 of insulating foam filling the space 16 and adhered to the outer face of the inner skin 14 and the inner face of the outer skin 15. Plastic spacer struts 31 hold the plates 14 and 15 apart. These struts 31 are replaceable at the doors 11 and 12 where they are subject to considerable wear.

The roof 13 is formed by a full-length beam 25 (FIGS. 3A and 3b) having an upper surface 26 and formed as seen by a comparison of FIGS. 5 and 6 with a camber, that is an upward central curvature, so that when loaded (FIG. 6) it is straight. The beam 25 is formed as shown in FIG. 4 with longitudinally extending passages 30 for transmitting heated or cooled air from the heating/cooling system 5 to the space 3. These passages 30 are not formed as surface ducts, but are recessed in the beam 25

so that they will not be damaged when freight is moved about in the space 3.

The side walls 9 and 10 are each formed by two long sliding doors 11 and 12 giving access, when open to the entire interior space 3. The doors 11 have lower edges 18 projecting past a lower face 23 of the floor 6 and provided with rollers 20 sliding in tracks 21 on the outer longitudinal edges of the chassis 1 and upper edges 19 having inward angled extensions 24 received in guides 22 on the outer longitudinal edges of the roof 13. Latches 27 at the ends of the sliding doors 11 and 12 engage in the floor 6 and roof 13 to secure the doors 11 and 12 in place during travel. The doors 11 and 12 ride sealingly on plastic profiled tracks 28 and 29 at the respective edges of the roof 13 and floor 6, these profiles 28 and 29 forming peripheral air-space seals 32 further insuring good insulating of the space 3. The curvature of the beam 25 is such that the doors 11 and 12 naturally slide closed.